

Confined Spaces in Construction

**29 CFR 1926
Subpart AA**

PRESENTED BY:

Joan M. Spencer
Compliance Assistance Specialist
Tampa Area Office



Introduction

- The rule will provide construction workers with protections similar to those manufacturing and general industry workers have had for more than two decades, with some differences tailored to the construction industry.



Good News!

Similar to general industry



Overview of Differences

- **GI Standard, Plus**
 - **A competent person must conduct worksite evaluation**
 - **Employers using “alternate procedures” for permit space entry must prevent physical hazard exposures through elimination or isolation through methods such as LOTO**
 - **Permits may be suspended instead of cancelled, provided the space is returned to permit conditions prior to re-entry**



Overview of Differences

- **GI Standard, Plus**
 - **Continuous monitoring of atmospheric and engulfment hazards**
 - **Employers relying on local emergency services for rescue must arrange for responders to notify in advance if responders will be unavailable**
 - **Specific information exchange requirements for multi-employer work sites**



Subpart AA

- **General Industry Standard published 1993**
- **Proposal 2007**
- **Final Rule published May 4, 2015**
- **Effective August 3, 2015**



Subpart AA Scope

- **The standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces, with exceptions**



Subpart AA Scope

- **Subpart Y still covers diving**
- **Subpart P still covers work in excavations**
 - **If there is a confined space within an excavation, such as a sewer pipe, and a worker enters the pipe to perform work, that is covered by Subpart AA**
- **Subpart S still covers underground construction**
 - **Work done in an underground space that does not involve altering the “structure” of the space is covered by Subpart AA (such as equipment installs)**



Confined Spaces

- **Large enough for a person to enter**
- **Difficult to exit in the event of an emergency**
- **Is not intended for regular human occupancy**
 - e.g. bins, boilers, pits, manholes, tanks, incinerators, scrubbers, concrete pier columns, sewers, transformer vaults, HVAC ducts, storm drains, water mains, precast concrete and other pre-formed manhole units, drilled shafts, digesters, lift stations, cesspools, silos, air receivers, turbines, chillers, bag houses, etc.



Confined Space Hazards

- **Atmospheric (respirable) hazards, e.g. hydrogen sulfide, carbon monoxide, low oxygen, excessive oxygen, and other toxic gases and particulates**
- **Explosive hazards, including flammable gases in concentrations above 10% of the lower explosive limit (LEL), combustible dusts, and other explosive/flammable materials**
- **Physical hazards, including tripping hazards, fall hazards, struck-by hazards, and electrical hazards**



Permit-Required Confined Space

- **A confined space that has one or more of the following characteristics:**
 - **Contains or has a potential to contain a hazardous atmosphere;**
 - **Contains a material that has the potential for engulfing an entrant;**
 - **Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or**
 - **Contains any other recognized serious safety or health hazard.**



Hazardous Atmosphere

- **Means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness from one or more of the following causes:**
 - **Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);**
 - **Airborne combustible dust at a concentration that meets or exceeds its LFL; (can be approximated as a condition in which the combustible dust obscures vision at a distance of 5 feet or less.)**



Hazardous Atmosphere

- **Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;**
- **Any other atmospheric condition that is immediately dangerous to life or health;**



Hazardous Atmosphere

- **Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subparts D and Z of this part which could result in employee exposure in excess of its dose or permissible exposure limit.**
 - **An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this definition.**



So, Hazards not Addressed by the Confined Space Rule

- **The confined spaces rules address hazards that could make it difficult or impossible for a worker inside the space to exit. In other words, hazards that have an immediate or near-immediate impact on the entrant**
- **Other rules address long-term exposure hazards, like the standards addressing lead and asbestos exposure.**

LOI March 26, 1999, PRCS FAQs



Competent Person

- **A person capable of identifying existing and probable hazards who has the authority to take corrective measures – must identify all confined spaces.**

1203(a)

- **The competent person must also identify all permit spaces – those workers will enter, and those they will not. All permit spaces must be posted/identified in some way.**

1203(b)



Employer = Entry Employer

- An employer becomes an entry employer when it “decides that” an employee it directs will enter, rather than at the later point when the employee actually enters.
- Entry Employer means any employer who decides that an employee it directs will enter a permit space.
- **Note to the definition of “Entry Employer”.** An employer cannot avoid the duties of the standard merely by refusing to decide whether its employees will enter a permit space, and OSHA will consider the failure to so decide to be an implicit decision to allow employees to enter those spaces if they are working in the proximity of the space.



1203(d)

- **Employer who has determined that workers will perform work in permit spaces must develop a permit space program**
- **If workers will not perform work in permit spaces, the employer must ensure that the workers are prevented from entering the permit spaces 1203(c) (e.g. posting and barricades.)**



Permit Space Program

- A permit space program is a written plan that includes:
 - Identification and evaluation of the hazards in the permit space 1204(b)
 - Measures that will be used to prevent unauthorized entry 1204(a)
 - Means, procedures, and practices needed for safe entry, including: 1204(c)



Program Elements

- **Specify acceptable entry conditions, including but not limited to**
 - **Atmospheric conditions such as oxygen levels, explosive substance limits, toxic substance limits**
 - **When and how the employer will provide each authorized entrant or their representative the chance to observe monitoring or testing of permit spaces**
- **How the employer will isolate the permit space and physical hazards within the space, if needed.**



Program Elements

- **Whether and how the employer will purge, inert, flush, or ventilate the permit space to eliminate or control atmospheric hazards.**
- **Specify the use of a monitoring system or procedures that will detect hazardous changes in atmospheric conditions in time for entrants to safely exit the space.**
- **Discuss the barriers that will be used to prevent entrants from external hazards and unauthorized entry.**



Program Elements

- **Ways the employer will verify that conditions in the permit space are safe for entry throughout entry operations.**
- **Ways the employer will eliminate any conditions that could make it unsafe to remove an entrance cover.**
- **Discussion of necessary safety equipment and how the employer will ensure entrants are provided with appropriate PPE.**



Program Elements

- **Examples of required equipment:**
 - **Testing and monitoring equipment**
 - **Ventilation equipment**
 - **Communications equipment for attendants and entrants**
 - **PPE**
 - **Lighting equipment that meets the illumination requirements of 1926.56 and is rated for the conditions in the space (flammable/combustible substances)**



Program Elements

- **Equipment (cont'd)**
 - **Ladders, etc. needed for safe entry and exit**
 - **Rescue and emergency equipment, such as**
 - **Harnesses, lanyards, wristlets or anklets, tripods, winches, etc.**



Program Elements

- **Space Evaluation During Entry**
 - **Testing of conditions prior to making changes in ventilation**
 - **Continuous monitoring of atmospheric hazards unless equipment for continuous monitoring is not commercially available**
 - **If continuous monitoring is not used, employer must plan for period monitoring at sufficient frequency to provide workers with time to exit**



Program Elements

- **Space Evaluation During Entry**
 - **If it is a continuous space and isolation is not possible, perform pre-entry testing to the extent possible**
 - **Continuously monitor conditions in the areas where entrants are working, unless periodic monitoring must be used as above**
 - **Provide an early-warning system that continuously monitors for engulfment hazards and alerts entrants of hazards in sufficient time for them to safely exit**



Program Elements

- **Atmospheric Testing and Monitoring**
 - **Employer MUST test for oxygen first, then combustible gases and vapors, then toxic gases and vapors**
 - **Provide each entrant or representative with an opportunity to observe all testing or monitoring of permit spaces**
 - **Reevaluate permit spaces at the request of entrants or representatives when there is some indication that the current evaluation may not have been adequate**
 - **Provide entrants or representatives with the results of testing**



Program Elements

- **Provide at least one attendant to monitor permit space(s)**
- **Assigning an entry supervisor for each entry**
- **Ensure that each employee assigned a role is provided training for that role (entrant, attendant, entry supervisor, atmospheric monitor, etc.)**



Program Elements

- **Rescue**
 - **List procedures for summoning rescue and emergency services (including procedures for emergency assistance in the event of a failed rescue)**
 - **If necessary, list procedures for entry rescue, including evaluation of rescue services**



Program Elements

- **Cover the system for issuing, use, and cancellation of permits**
- **Cover the procedures for coordinating entry operations in consultation with the controlling contractor when more than one employer will perform work that affects conditions in the space**
- **Cover procedures for concluding entry operations**



Program Elements

- **Cover procedures for review of the program when incidents or near-misses reveal deficiencies in the program**
- **Cover procedures for annual review of canceled permits and potential revision of program to ensure workers are protected from permit space hazards**



What about “Alternate Procedures”

- **Much like 1910.146(c)(5)**
 - A permit space where the only hazard is atmospheric, because there are no physical hazards or physical hazards have been eliminated/isolated so as to prevent worker exposure
 - No need for a permit or program so long as the employer provides sufficient continuous forced-air ventilation to eliminate the atmospheric hazard and
 - Continuous monitoring must be used unless the employer can show it is not available, in which case periodic monitoring must be used with sufficient frequency to ensure workers have time to exit safely



What about “Reclassification”

- **Similar to 1910.146(c)(7), found at 1926.1204(g)**
 - **Competent person must determine that the space:**
 - **Poses no actual or potential atmospheric hazards and all physical hazards within the space have been eliminated without entry (ex. LOTO of circuit breaker), unless doing so without entry is infeasible**
 - **If eliminating hazards without entry is infeasible, entry must occur using full permit requirements. If testing during that entry shows no atmospheric or physical hazards, the space may be reclassified**
 - **The entry employer must document the basis for reclassification**
 - **If hazards arise in a reclassified space, the space must be evacuated and classified as a permit space**



What Needs to be on the Permit?

- **The space to which the permit applies**
- **The purpose of the entry**
- **The date and duration of the permit**
- **The names or other designation of the authorized entrants (can refer to a roster or tracking system)**
- **Methods used to detect increased hazardous atmospheric conditions**



What Needs to be on the Permit?

- **Name of attendant(s)**
- **Name of entry supervisor(s), and signature or initials of each supervisor who authorizes entry**
- **Hazards in the space and measures used to eliminate or control permit space hazards**
- **Acceptable entry conditions**
- **Results of atmospheric tests and monitoring and names/initials of testers, and dates of tests**



What Needs to be on the Permit?

- **Rescue and emergency services that can be summoned and the means (such as equipment to use and numbers to call) for summoning those services**
- **Communication procedures used by entrants and attendants during entry**
- **Equipment necessary for entry**
- **Any additional permits (such as hot work) issued to authorize work being performed in the space**



Training

- **Employer must provide to EACH affected employee**
 - **At no cost to the employee**
 - **In a language and vocabulary the employee can understand**
 - **Before the employee is assigned duties**
 - **Before there is a change in assigned duties**
 - **Whenever there is a change in permit space entry operations for which the employee has not been trained**
 - **Whenever there is a deviation from permit space entry procedures or there are deficiencies in the employees knowledge or use of these procedures**



Training

- **What must training cover?**
 - The hazards in the permit space and methods used to isolate, control, or otherwise protect employees from the hazards
 - Dangers of unauthorized rescue
 - Proficiency in the duties required by this standard and any new or revised procedures, as necessary
- **Records**
 - Employers must maintain training records that contain the employee's name, the trainer's name, and the dates of training, for as long as the employee is employed by that employer. The records must be available to employees and their representatives as well



Authorized Entrants

- **Need to know the hazards that may occur during entry, including signs, symptoms, and consequences of exposure**
- **Need to know how to use safety equipment**
- **Need to communicate with attendant(s)**
- **Must alert the attendant if there is an indication of exposure or a prohibited condition**
- **Must evacuate the space if this occurs or if the attendant orders evacuation or an evacuation alarm sounds**



Attendants

- **Must know the hazards that may occur during entry, including signs, symptoms, and consequences of exposure**
- **Must know possible behavioral effects of hazard exposure**
- **Must maintain an accurate count of entrants in the space and be able to identify who is in the space**
- **Remains outside the space until relieved by another attendant**



Attendants

- **Communicates with entrants to assess entrant status and to alert entrants of the need to evacuate**
- **Orders entrants to evacuate if:**
 - **A prohibited condition occurs**
 - **Behavioral effects of exposure are apparent in an entrant**
 - **If a condition outside the space could endanger the entrants, or**
 - **If the attendant cannot perform the duties required under the standard**



Attendants

- **Must summon rescue and other emergency services as soon as it is determined that entrants may need assistance to escape**
- **Must warn unauthorized persons that they must stay away from the permit space**
- **Advises unauthorized entrants that they must exit immediately if they have entered the space, and informs authorized entrants and entry supervisor**
- **Must perform non-entry rescue as specified by the program**
- **Performs no duties that might interfere with attendant duties**



Entry Supervisors

- **Must know the hazards that may occur during entry, including signs, symptoms, and consequences of exposure**
- **Must verify that all tests specified by the permit have been conducted and that permit procedures and equipment are in place before allowing entry to begin**
- **Must terminate entry and cancel/suspend permit in the event of work completion, prohibited conditions, or emergency, as appropriate**



Entry Supervisors

- **Verify availability of rescue services and that means of summoning them work, and that the rescue service will notify if it becomes unavailable**
- **Remove unauthorized entrants**
- **Must determine that entry operations are consistent with the terms of the entry permit and that acceptable entry conditions are maintained throughout the entry**



Rescue

- **Non-entry rescue must be provided unless it is infeasible**
 - **Full-body harness with a retrieval line attached at the dorsal attachment point, above the entrant's head, or at another point which allows the entrant to present a small enough profile to be pulled out of the space safely**
 - **Wristlets or anklets may be used if the employer can demonstrate that a full-body harness is infeasible or presents a greater hazard**



Rescue

- **Non-entry rescue**
 - **The other end of the retrieval line must be attached to a mechanical device or fixed point outside the permit space so that rescue can begin as soon as it is deemed necessary. A mechanical device must be available if entrants are in a vertical space more than 5 feet deep.**
 - **Unsuitable equipment must not be used (retrieval lines that could become entangled with the retrieval lines of other entrants, etc.)**



Entry Rescue

- **Employers must evaluate an entry rescue service to ensure it can**
 - **Respond in a timely manner**
 - **Perform rescue in the specific permit space(s) identified**
 - **Reach victims in a time frame appropriate for the hazards identified**
 - **Is equipped for and proficient in the necessary services**
 - **Agrees to notify the employer in the event that the service becomes unavailable**



Entry Rescue

- **The employer must inform the rescue service of the hazards they may confront**
- **The employer must provide the rescue service with access to all permit spaces from which rescue may be necessary**

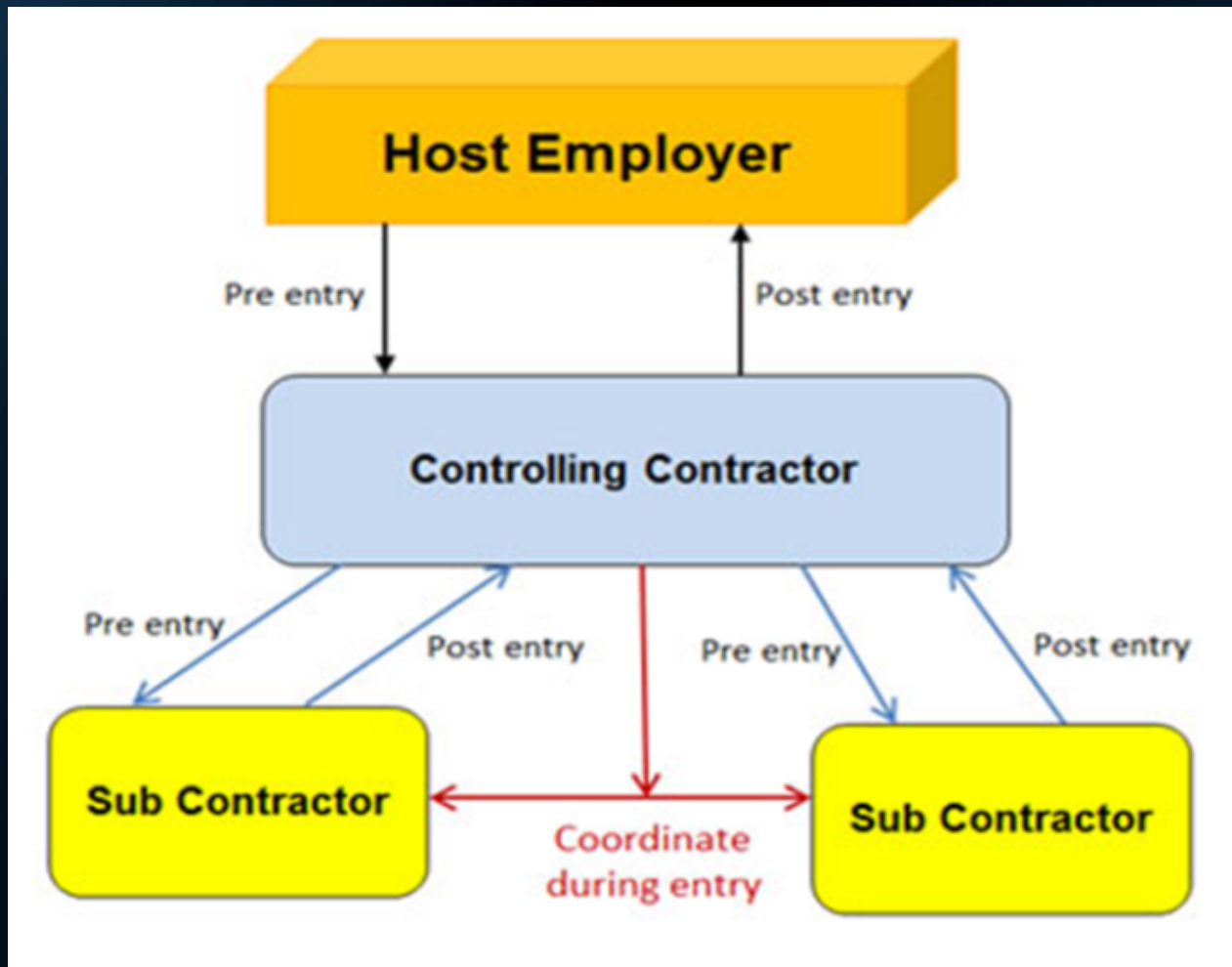


Rescuers

- **An employer whose workers will perform rescue must, at no cost to the employees**
 - **Provide the necessary PPE to each employee and train each employee in its use**
 - **Train each employee how to perform assigned rescue duties**
 - **Train each employee in basic first aid and CPR, and ensure at least one member of the team has a current certification in basic first aid and CPR**
 - **Ensure each employee practices rescue before attempting an actual rescue, and at least every 12 months**



Information Exchange



Host Employer

- The employer that owns or manages the property where the construction work is taking place.
- **Note to the definition of “Host employer”.**
If the owner of the property on which the construction activity occurs has contracted with an entity for the general management of that property, and has transferred to that entity the information specified in §1926.1203(h)(1), OSHA will treat the contracted management entity as the host employer for as long as that entity manages the property. Otherwise, OSHA will treat the owner of the property as the host employer. In no case will there be more than one host employer.



Controlling Contractor

- The employer that has overall responsibility for construction at the worksite.
- **Note to the definition of “Controlling Contractor”.**

If the controlling contractor owns or manages the property, then it is both a controlling employer and a host employer.



Information Exchange

- **The host employer has to give any information it already has to the controlling contractor.**
 - **If the host employer does not have information about the location of each known permit space, the hazards or potential hazards in the space(s), and previous precautions taken regarding the space(s), it is not required to acquire that information**



Information Exchange

- **Before entry operations begin, the controlling contractor must:**
 - **Obtain information from the host employer if it has it.**
 - **Provide the following information to each entry employer entering a permit space and any other employer whose activities could affect the space:**
 - **Information from the host employer**
 - **Any additional information the controlling contractor has**
 - **Precautions that the host employer, controlling contractor, or other entry employers have implemented**



Information Exchange

- **Before entry operations begin, each entry employer must:**
 - **Obtain all of the controlling contractor's information regarding permit space hazards and entry operations**
 - **Inform the controlling contractor of the permit space program to be followed, including likely hazards to be found or created in the space**



Information Exchange

- **Coordination**
 - **The controlling contractor and entry employer(s) must coordinate entry operations when**
 - **More than one entity performs entry operations in the same space at the same time**
 - **Permit space entry is performed at the same time that any activities that could cause a hazard in the permit space are performed**



Information Exchange

- **After entry operations**
 - **The controlling contractor must talk to each entity that entered a permit space about the program followed and any hazards found or created in the permit space(s) while in the space**
 - **The entry employer must inform the controlling contractor in a timely manner of the program followed and of any hazards found or created while in the space**



Information Exchange

- **After entry operations**
 - **The controlling contractor must give the host employer the information exchanged with entry employers**
- **If there is no controlling contractor, the requirements for and role of controlling contractor must be fulfilled by the host employer or whichever employer arranges (contracts) to have an employer perform work in a permit space**



Questions?

